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THE CIRCULATION OF THE KIDNEY—(Circulatio Renis.)—HYRTL'S EXSANGUINATED RENAL ZONE —(Zona Exsanguinata Renis Hyrtlii.)

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Corrosion anatomy is the most accurate of all methods and the least employed. By corrosion anatomy is understood the injection of vessels or ducts by melted paraffin or wax and subsequently placing the specimen in acids to corrode the parenchymatous and connective tissue cells leaving the undissolved wax as a frame-work. For the purpose of studying the circulation of the ureteral pelvis, calyces and renal parenchyma I made some 30 specimens of corrosion anatomy illustrations, 7 of which are here presented. Also from these labors I wish to present the important and valuable surgical landmarks in the kidney which I shall designate "Hyrtl's exsanguinated renal zone." (Zona exsanguinata Hyrtlii.)

The relation of vessels to renal parenchyma, ureteral calyces and ureteral pelvis are sufficiently constant to be located.

The greater part of the arteries and veins are located on the mainly on the central ventral surface of the ureteral pelvis and divides into some five smaller branches which course generally parallel with the calyces. The smaller dorsal renal branch passes more proximalward on the ureteral pelvis and courses along the distal ends of the calyces on the proximal border of the ureteral pelvis. The primary renal branches, forming themselves in the shape of a double-bladed vascular fan, one on the ventral surventral surface of the ureteral pelvis and calyces in which relation the vein stands ventral while the artery lies dorsal to it, both being accompanied by nerves and lymphatics.

The arteria renalis emits a large ventral branch which lies face and the other on the dorsal surface of the ureteral pelvis and calyces, make arterial arcades—open distalward for the ureteral pelvis and proximalward for the ureteral calyces. These arterial arcades envelop the ureteral pelvis and calyces ventrally and dorsally like two hands or like a clam or an oyster in its shell. It is, however, fortunate for renal surgery that vessels are not so richly distributed to the distal dorsal surface of the ureteral pelvis as they are on the ventral. The branches of the renal vein at its origin converge in a similar manner as the artery on the ventral and dorsal face of the pelvis. The right vena renalis is short as well as the left arteria renalis. The right renal vein is so short that the vena cava borders on the ureteral pelvis, which is significant in renal surgery as adhesions may exist with consequent danger of laceration of the vena cava. The primary ventral and dorsal branches of the arteria renalis divide themselves in some five divisions coursing adjacent to and parallel with the calyces and terminate a short distance externally lateral to the proximal periphery of the calyces. ((See illustrations of casts.) The paraffin and celluloid-casts of the renal vessels show an exact double renal circulation, the periphery of the ventral and dorsal renal arterial branches approach and are in contact, but do not anastomose. There then exists an exsanguinated or avascular zone.

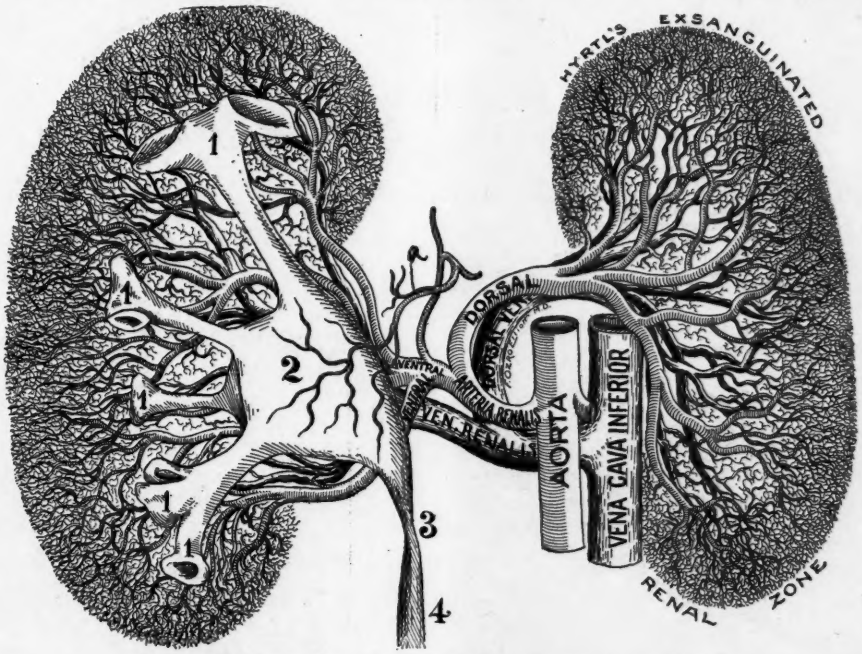

Fig. 1.—Hyrtls exsanguinated renal zone. Man 46 years old. Illustrates (life size), the double circulation of kidney, and the separation of the dorsal and ventral vascular blades. I injected the ureter, proper ureteral pelvis and calyces with melted paraffin, while the arteria renelis was injected with celluloidine. The renal perenchyma and other tissues were corroded with H N O 3 for about 5 days. It is preserved in 10 per cent glycerine and water 90 per cent. The dorsal and ventral primary renal branches were forced apart, as they do not anastamose, and drawn as noted in the illustration. The ureteral pelvis (2) and ureteral calyces (1-1) lie in the ventral vascular renal blade like a picture in a book. The dorsal renal vascular blade is the smaller. 3, Proximal urethral isthmus. 4. Lumbar spindle; a, Arteria nutrientis pelvis. Left kidney; dorsal view.

Hyrtl demonstrated this anatomic fact over thirty-three years ago, and he wittily remarkt that it kept him busy making specimen casts of the kidney for foreign museums. To attack surgically the ureteral calyces and ureteral pelvis with the scalpel the renal cortical incision should be made at the junction of the periphery of the dorsal and ventral renal arterial blades, i. e., in

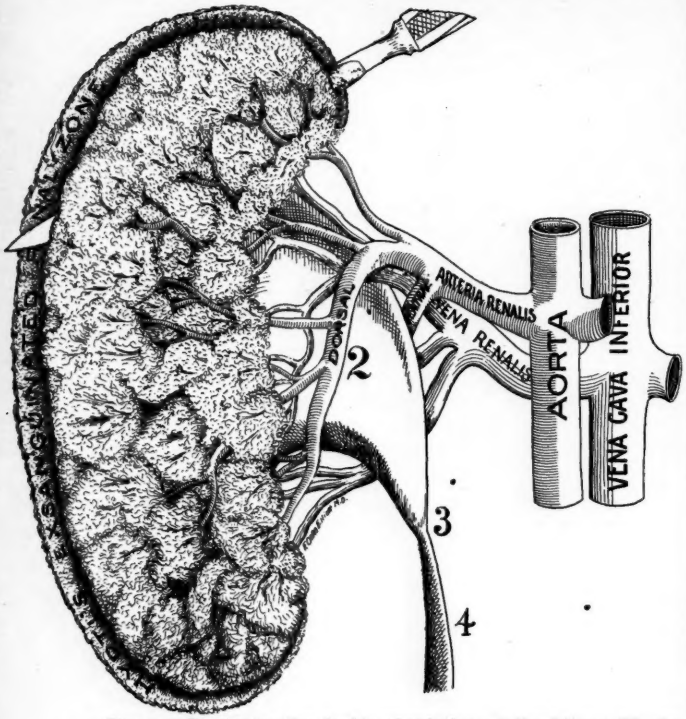

Fig. 2. Illustrates the double circulation of the kidney life-size with a scalpel incising Hyrtl's exsanguinated renal zone. It is the left kidney of a man 66 years old. The ureter was injected with melted paraffin, while the vasa renalis were injected with celluloidine. The specimen was corroded in dilute H N O 3 for about 3 weeks, whence being washt it had the appearance of a sponge. Hyrtl's exsanguinated renal zone was definitely demonstrated by separating the non-anastomosed periphery of the dorsal and renal vescular blades. The dorsal surface is presenting. 2 is the ureteral pelvis, and 3, the proximal ureteral isthmus. 4, lumbar spindle. The renal incision should be executed as indicated in the cut ½ inch dorsal to the lateral longitudinal renal border for minimal hemorrhage.

the exsanguinated renal zone of Hyrtl, one-half inch dorsal to the lateral longitudinal renal border.

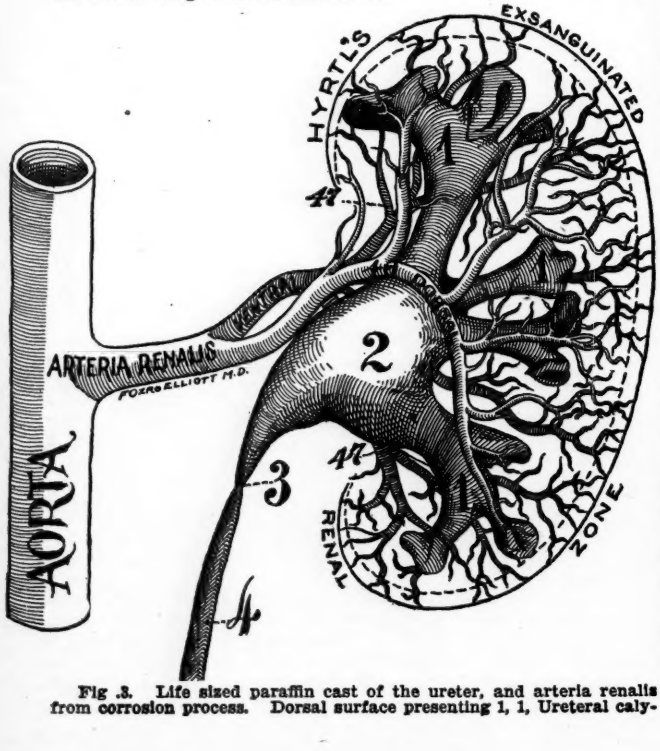

Fig .3. Life sized paraffin cast of the ureter, and arteria renalis from corrosion process. Dorsal surface presenting 1, 1, Ureteral calyces; 2, ureteral pelvis; 3, proximal ureteral isthmus; 4, lumbar spindle. A Right kidney, male, 45 years of age. The dotted line represents Hyrtl's exsanguinated renal zone. The dorsal primary renal branches are drawn lightly-shaded, while the ventral branches are darkly-shaded. Observe that the dorsal ureteral pelvis is free from vessels, permitting safe ureteral surgical intervention.

Paraffin does not reproduce such accurate and brilliant examples as celluloidin in the fine terminal vessels, as it is friable material, and during the washing process becomes broken and torn.

NATURAL DIVISION OF THE KIDNEY.

If the kidney be injected with liquid wax or paraffin and its tissue corroded with acid the wax or paraffin structure remaining will represent two vascular blades having the shape of a closed oyster or clam shell. The ramus renalis dorsalis forms the smaller dorsal vascular blade and the ramus renalis ventralis forms the larger ventral vascular blade. These two renal vascular blades may be laid open like a book because the periphery of the dorsal and ventral renal arterial branches do not anastomose. The fine rich vascular renal periphery comes in contact, but no vessels of the dorsal renal segment anastomose with those of the ventral segment. The demarkation line, the natural vascular division of the renal segments, between the periphery of the dorsal and ventral vascular blade is a narrow curved zone or line, not one with a zigzag course. This zone I shall denominate in honor of its discoverer, Hyrtl's exsanguinated renal zone. It is practically the vascular kidney equator between the smaller dorsal and larger ventral renal parenchymatous segments.

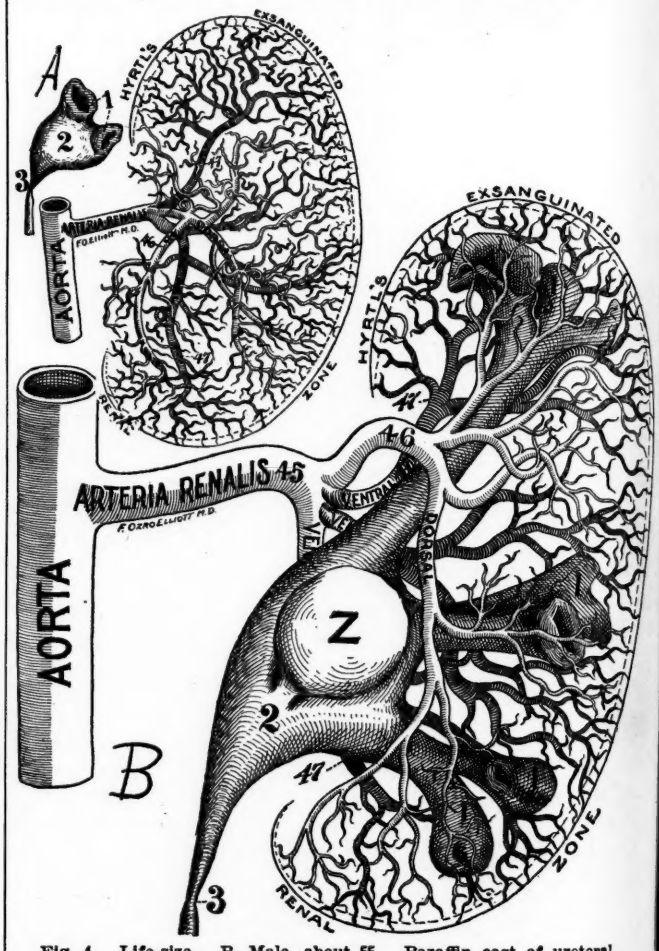

Fig. 4. Life-size. B. Male, about 55. Paraffin cast of ureteral pelvis, calyces and arterias renalis, corrosion specimen. 1, 1, ureteral calyces; 2, pelvis; 3, proximal ureteral isthmus; Z presents a ureteral pelvic cyst, where a stone existed. The dotted line is located in Hyrtl's exsanguinated renal zone. The dorsal primary renal arterial branches are darkly shaded. A. Paraffin cast of life size of a Rhesus monkey. The specimen resembles man almost exactly, so that the description corresponds. The dorsal primary renal branch is small, like that of man. Hyrtl's exsanguinated renal zone (the dotted line) is exactly as in man. The ureteral calyces (1) are rudimentary; however, the ureteral pelvis (2), and the proximal ureteral isthmus are distinctly markt as in man.

THE SIZE OF THE RENAL VASCULAR BLADES.

The two renal vascular blades are not of equal size. In man the dorsal renal vascular blade is the smaller, as it nourishes less renal parenchyma and presents less or smaller papillae renales. The ventral renal vascular blade is the larger, as it nourishes more renal parenchyma, presents more or larger papillae renales. This anatomic fact forces the line of demarkation between the periphery of the dorsal and ventral vascular blades in the dorsal renal segment. The renal equator should be the greatest parallel circle. However, it occurs in man's kidney (and many of the lower animals) that on the proximal renal border the ventral renal arterial branches pass to a slight extent on the dorsal renal segment while on the distal renal border the dorsal renal arteries pass to some extent on the venerial renal segment. This deviation of the demarkation line (Hyrtl's exsanguinated renal zone) between the periphery of the renal vascular blades from the renal equator is about one-fourth of an inch. Hence the exsanguinated region is not an exact renal equator, but cuts the renal equator, as an ecliptic, at an acute angle.

The anatomic fact that the branches of the arteria renalis do not anastomose at their periphery is no mere curiosity, but of great utility in renal pathology and surgery. If one takes a kidney, the arteries of which have been injected with melted paraffin or wax, and from which the parenchyma and connective tissue have been corroded by acid, and by warming the primary dorsal or ventral renal arterial branches bends them apart, it will be observed that the vascular periphery of the dorsal and ventral renal branches were in contact, but not one vessel of the ventral segment anastomoses with one on the dorsal segment.

LOCATION OF HYRTL'S EXSANGUINATED RENAL ZONE.

Since the ventral primary renal arterial branch is larger than that of the dorsal, it nourishes more renal parenchyma; hence Hyrtl's exsanguinated renal zone is not exactly in the equator of the kidney, but will be located in the segment of the kidney possessing the smaller arterial branch which is the dorsal segment.

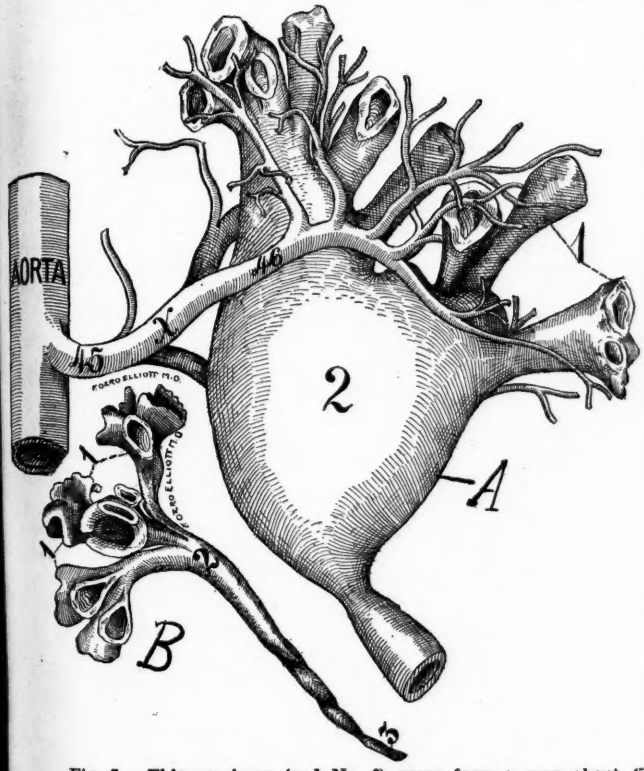

Fig. 5. This specimen (and No. 6) arose from a man about 45 who had no visible obstruction, but the ureteral spiral valves (5 in number) were well developt. Life size paraffin casts of A, adult ureteral pelvis (2), and calyces (1-1), and arteria renalis (45.) B. Infant of 4 weeks. 1, calyces; 2, pelvis, and 3, proximal ureteral isthmus; 4, X. or 46, dorsal branch of renal artery. This pelvis was doubtless hydronephrotic. Note the spiral in the infant's ureter (B) at 3. Note how the dorsal ureteral pelvic surface is free from blood vessels. The renal arterial branches at the periphery (Hyrtl's exsanguinated renal zone) do not anastomose, but form an avascular zone, which in renal incision is quite free from hemorrhage. A presents the dorsal surface.

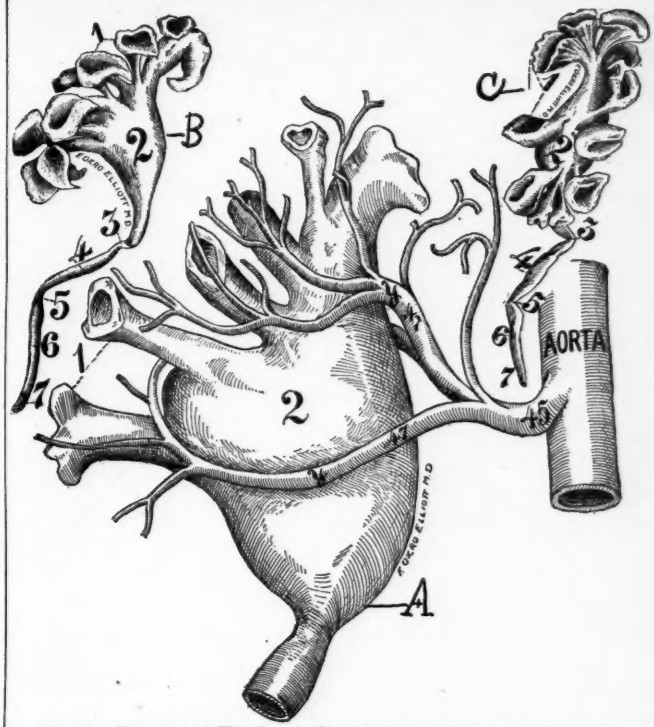

Fig. 6. Reverse of Fig. 5. A life-sized paraffin cast of adult ureteral calyces and pelvis and arteria renalis. Ventral surface showing dorsal arterial renal branch (47), 45 arteria renalis. The pelvis shows hydronephrosis b and c life size paraffin casts of 7 weeks' old infant calyces, pelvis and ureter proper. Ventral and external lateral view of same ureter. 1, calyces; 2, pelves; 3, proximal uteteral isthmus; 4, lumbar spindle; 5, middle ureteral isthmus; 6, pelvic spindle; 7, distal ureteral isthmus. Observe how dangerous it would be to incise the ureteral pelvis ventrally as one of the ventral primary branches (y, 47), passes across the distal surface of the ureteral pelvis.

The smaller dorsal and the larger ventral renal vascular blades enclose the ureteral calyces and pelvis like a clam or oyster in its shell. Frequently one blade of this shell is larger than the other which forces the line of demarkation between the peripheral border of the clam-shell blades, the equator, more in one segment than the other. In man after injection and corrosion of ureteral pelvis, calyces and renal vessels one can separate the dorsal renal arteries pass to some extent on the ventral renal one of the pages, i. e., the renal vascular blade, will lie the ureteral pelvis and calyces like a picture. The interior of the renal vascular blades is ribbed like the ribs of an umbrella or the ribs of a ship—the ribs represent the primary branches of the dorsal and ventral arteria renalis.

Two cases of double renal arteries arose in our specimens. In the first case both proximal and distal renal arteries divided in a dorsal and ventral branch. In the second case the proximal renal artery divided in a ventral and dorsal branch while the distal branch formed a ventral renal branch only. Hyrtl notes that his specimens demonstrated that in a kidney with a double artery the one always belonged to the ventral while the other belonged to the dorsal renal segment.

In all animals examined as well as in the human corrosion anatomy, it was easy to demonstrate that Hyrtl's exsanguinated renal zone exists, that it does not lie in the exact renal equator, that the dorsal or ventral renal branch is the smaller, that the smaller renal vascular blade located the demarkation line in its own segment; consequently that Hyrtl's exsanguinated renal zone in man and mammals is a natural vascular renal division due to non-vascular or avascular peripheral coalescence.

In many animals (ruminants, as the sheep—carnivora, as the dog), after injection of ureter and renal vessels with corrosion one cannot separate the renal vascular blade like an open book without fracture of the vessels because the secondary ventral and dorsal renal branches are lodged in the groove like evaginated calicular blades.

All corrosive anatomy demonstrates that the branches

of the arteria renalis do not anastomose even in their capillary system nor at their distal periphereal border. In the perenchyma of the lungs, liver, spleen, mammae and all glands is found this same anatomical arrangement of non-anastomosis, the uterus alone being an exception to this rule. The end-arteries of the tractus genitalis anastomose solidly with their fellows in the opposite bilateral segments forming what I have designated the central longitudinal oligemic uterine zone. (Zona uterina centralis longitudinalis oligemica.) This oligemic uterine zone has a minimum number of vessels and minimum blood supply, but cannot, like the corresponding zone in the kidney, be truly designated as an exsanguinated or avascular zone.

To Dr. Joseph Hyrtle, the celebrated Viennese anatomist, is due the credit of this discovery. For two years I have been working along the line of this discovery by the aid of corrosion anatomy and the X-ray, and have applied it in renal surgery. I have found in surgical practice that if the kidney be incised one-half inch dorsal to the longitudinal lateral renal border the hemorrhage is the minimum of any other possible incision.

VASA NUTRIENTIA PELVIS.

The ureteral pelvis lies between the ventral and dorsal branches of the arteria renalis as in a bowl. From the dorsal and ventral branches of the arteria renalis arise small arterial vessels which pass to the walls of the ureteral pelvis and calyces. The arteries nutrientes pelvis have no relation with the parenchyma and renal secretion, and do not form coiled vessels as in Bowman's capsule or the renal glomerulus.

The function of the arteria nutrientia pelvis is to nourish the ureteral pelvic and calicular wall. The arteria nutrientia pelvis ends at the junction of the fornix and papilla renalis. These vessels surround the proximal end of the calyces as with a circular vascular zone. To secure a view of the arteries nutrientes pelvis the paraffin or celluloidine should be colored red in the renal vessels while the paraffin in the ureter should be white. Also dilute acid should be used to corrode and gentle washing should be employed on the specimen to avoid trauma.

ARTERIA CAPSULARIS RENIS.

These arteries supply the capsule of the kidney. They may arise from various sources as from the arteria renalis or its primary branches, arteria supra-renalis, phrenica, lumbar, ovarica (in one specimen, in both).

Corrosion and X-ray work show that the arteria capsularis renis arises from the arteria renalis, its primary branches or from the arteri ovarica.

REPORT OF CASES OF UROGENITAL TUBERCULOSIS.*

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CASE I.—On May 26, 1902, I was called to see Miss Katie O., widow, aged 26 years, bookkeeper, and found her suffering from a pronounced cystitis; tongue furred, pulse 108, temperature 103.3, and much tenderness in the left lumbar region with pain radiating forward along the course of the ureter of that side. There was a history of a cystitis beginning the latter part of the preceding March and continuing up to the present time with exacerbations and remissions, the present acute trouble with the pain and tenderness over the kidney and the course of the ureter being of about a week's duration. There was no history of venereal trouble, nor did examination reveal any evidence of any such trouble. There was some suggestion of calculus, but I was led to make a diagnosis of either vesical tumor or tuberculosis. She gave a history of having had a "severe cold," lasting some months, about a year previously, during which attack she lost a good deal of flesh and was advised by a physician in Joplin, Mo., to seek a Western climate. At the time this examination was made by me, she had a cough and physical examination revealed pulmonary tuberculosis.

I had her taken to St. Joseph's Hospital the following morning, and on May 28, 1902, I examined the bladder cystoscopically, and found the surface studded with grayish, tubercular nodules and ulcers. The orifice of the left ureter was covered with an ulcer. The mucous membrane was not congested to any great degree, nor was there any pronounced thickening of the vesical wall. I catheterized the left ureter, and while attempting to pass the catheter into the right ureteral orifice in some way broke the tip of the catheter. Not being supplied with another catheter at that time, the examination was concluded, and no further attempt was made to catheterize the right ureter, as there were absolutely no symptoms referable to the kidney of that side. The urine was examined by Dr. Frank Hall and found to contain renal epithelium, some few pus cells and the bacillus tuberculosis. The diagnosis of renal, ureteral and vesical tuberculosis being thus establisht, I determined to do a nephrotomy, having in view a possible nephrectomy.

I operated June 2nd, exploring the kidney-pelvis thoroly. The kidney was unusually friable and somewhat enlarged, the capsule propria seemingly shrunken. There was no collection of pus. I split the capsule propria and anchored the kidney, instituting drainage into the renal pelvis. The patient made an uneventful recovery from the operation, the drainage tube being retained in situ for three weeks. The wound healed without fistula.

The bladder was irrigated daily with 1-10,000 sublimate solution for awhile, and then irrigations were discontinued, creosote being administered internally.

Examination six weeks after operation showed absence of ulcers and cystitis. The urine was normal and repeated examinations failed to disclose tubercle bacilli. There was no tenderness over the kidney or ureter and no pain. The patient had gained about fifteen pounds in weight. There was pronounced improvement in the pulmonary condition, cough having ceast.

On September 8th, I received a letter from her stating that her improvement had continued, and that there was now no evidence of either pulmonary or urogenital trouble.

The result in this case following such conservative surgical treatment was pleasantly surprising to me, and has encouraged me to pursue a similar course in the future.

Contrary to the clinical evidence in this case, I am inclined to the belief that the tubercular trouble originated in the kidney and that a bladder-infection proved to be the exciting cause. The previous tubercular involvement of the kidney, assuming this to have been present, would have made the upward path easy. Primary vesical tuberculosis is so rare that Koenig says it does not exist, infection taking place most readily from the kidneys. In the absence of genital tuberculosis, I base my conclusion that the origin of the trouble in this case was the kidney, the tubercular kidney having probably existed for months before the primary attack of cystitis.

CASE II.—Mr. S. N. C., aged 37 years, married, promoter, referred by Dr. N. O. Harrelson. I saw this patient on May 31, 1902. Examination revealed a corduroy-road urethra up to the membranous region, where a stricture was encountered permeable with difficulty to a whalebone filiform. The right scrotum was enormously distended by what was found to be a hydrocele. After tapping the scrotum, the epididymis was found to be enlarged along its entire extent and at the globus major there was a fluctuating area. There was a history of a number of gonorrheal attacks, the patient estimating the number at nineteen, the first attack having taken place at the age of nineteen years. In 1889 the patient discovered the existence of a stricture which was dilated. He at this time suffered an attack of epididymitis, and had had several recurrent attacks, the last dating from May 15, 1902. His temperature at the time of my examination was 102.3.

I operated on June 2nd, at St. Joseph's Hospital, it being my intention to do the urethrotomy first (as being the most urgent), and then, if he stood it well, to follow with the operation on the epididymis, being satisfied that I had to deal with a case of tubercular disease. A combined urethrotomy was done, and as the patient took the anesthetic poorly, the operation on the epididymis was deferred.

The urethrotomy wound did nicely, and the patient's condition was satisfactory except for a continuous temperature. The epididymis did not reduce any in size and fluctuation became more markt.

On June 9, 1902, I again operated, including the fluctuating area in an elliptical incision, using dissection and avoiding opening the collection of pus. The cord was drawn down and ligated off as high up as possible, and the wound closed by catgut sutures, a small gauze wick being placed in the lower angle. The wound healed with no evidence of any trouble, and the patient was discharged June 18th, directions having been given as to the subsequent passage of sounds.

An examination of the epididymis shows three separate pus cavities. There are numerous little yellow tubercles scattered thru it. The gland substance is not diseased. I do not believe that anything short of orchidectomy would have proven satisfactory in this case. An attempt at drainage would have proven disastrous and epididymectomy with the epididymis in such a condition could not have given satisfactory results. Had the

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case been seen earlier epididymectomy with high resection of the vas might have been the operation of choice. I say high resection of the vas because it is in almost every instance involved. In Kocher's report of forty-five cases of epididymal tuberculosis, the vas was not involved in only three cases. In this case the epididymis was the only location that gave evidence of tubercular involvement, and there was no history suggestive of any such trouble in any part other than the epididymis.

CASE III.—Mr. A. G. B., aged 39 years, married, bookkeeper, was brought to me by Dr. N. A. Tesson, of this city, on July 2, 1902. On examination he was found to have urethro-perineal fistula with evidence of extravasation in the perineal region. This fistula had made its appearance about two weeks previous, and at the time of examination was discharging pus and urine. Urethral examination disclosed a stricture situated in the bulbous region, permeable only to filiforms. The prostrate was much enlarged and hard, and from the middle of the body was found a hard, apparently myomatous nodule about the size of a marble projecting into the rectum. The patient's temperature was 102, pulse rapid. There was a history of one case of gonorrhea at the age of 24 years, which proved hard to cure, extending over a period of about six months. There had been no subsequent trouble up to about four years ago, when some trouble in urinating caused him to seek professional advice, a stricture being found and dilated. Subsequent treatment had been neglected.

On July 5th, I operated, being assisted by Dr. Tesson. External urethrotomy was done and the edges of the fistula were denuded, all fistulous tracts being curetted thoroly. The prostatic overgrowth was most markt in the direction of the rectum, the general hypertrophy encroaching only to a slight degree on the urethral lumen. The marble-like growth was apparently myomatous, and was so diagnosed.

The subsequent course of this case was unsatisfactory, temperature and pus still continuing, while pain and tenderness persisted in the gluteal region. I neglected to state that at the time of the operation he had complained of pain and tenderness in this region, but there were then no evidences of fluctuation and a careful search failed to reveal any sinuses. Now, however, fluctuation was apparent, and pus could be expelled thru the perineal wound by pressure.

He was again placed on the table, and all sinuses laid open and curetted. Following this his condition improved for a few days, and again became unsatisfactory. There were added to the symptoms that had preceded a markt vesical irritation, a more copious purulent discharge from the perineal wound and testicular pain. On examination the left epididymis was found to be distinctly nodular. On rectal palpation the marble-like growth had disappeared completely, and there was merely a shell of the prostate left.

I had previously expresst my belief (at the first operation) that the fistulous tract was tuberculous, and the diagnosis was now made of added prostatic and epididymal tubercular disease. The perineal wound was opened down into the prostatic capsule and all tracts thoroly curetted. The antitubercular treatment upon which the patient had been for some time was pusht.

At the present time a suppurating fistulous tract into the perineal urethra still persists, tho showing slow progress towards closure. The nodular character of the epididymis has become still more pronounced, tho not markedly so. I believe the prognosis in this case without radical operative interference is bad.

CASE IV.—Mr. W. A. T., single, aged 23 years, pressman, consulted me July 7, 1902. The previous history was interesting. He had contracted gonorrhea eighteen months previous, which developt into the chronic form. There had been an attack of right-sided epididymitis, after which the epididymis remained markedly enlarged and tender, finally becoming the seat of purulent degeneration, orchidectomy being done. The chronic urethral trouble had persisted up to the present time.

The present history was that of typical prostatorrhea, accompanied by the usual neurasthenia. Examination revealed a hard enlarged prostate and a distinctly nodular, easily palpable seminal vesicle on the right side. A stricture, of calibre 24 French, was found in the membranous urethra.

He was placed on treatment suitable for the prostatorrhea and the urethral condition, also being given syrupus ferri iodidi as a general tonic. In addition to the diagnosis of prostatorrhea, that of tubercular disease of the seminal vesicle was made. He was earnestly advised to change his occupation, the need of hygienic measures being emphasized.

The constant post-glans ache, characteristic of prostatorrhea, was relieved to a great degree, he having intervals of freedom from it. The enlargement of the seminal vesicle increast, and acting on my advice, he took a month's vacation, going to the farm of a relative in Missouri, leaving the latter part of July.

I did not see him again until September 3, 1902, he having just returned from the country. He had gained some in weight, and the prostatorrhea now bothered him practically not at all, but his seminal emissions were slightly blood-tinged and painful. Examination disclosed great enlargement of the right seminal vesicle with distinct nodulation of the left. Microscopical examination of the seminal fluid, which before had proven negative, showed tubercle bacilli in abundance, pus and blood. His temperature was 101.3. He would not consider an operation, and on his return to the office a few days later, said he had given up his position and was going out West. Out of all these cases of genito-urinary tuberculosis this was the only one giving anything suggestive of a tubercular family history. He had a brother who had what was apparently from his description a tubercular psoas abscess.

CASE V.—This case, Mr. J. B. H., I saw with Dr. Lewis at Moberly, Mo., during the early part of September, 1902. The patient was a railroad man, twenty-four years of age. He denied, without qualification ever having had any venereal disease. About a year and a-half previously he had what he termed an "ache" in his right testis. On seeking professional advice he was told he had a varicocele, and told to wear a suspensory. This he did, but without improvement in his condition. Acute suppurative epididymitis supervened, and the testicle was removed. He had had no further trouble up to about a month previous to the time I saw him, when the left testicle repeated the history of its extirpated fellow. At the time I saw him the epididymis was greatly swollen and fluctuating at the head. The prostate and seminal vesicles were distinctly involved. Owing to sentimental reasons and at the same time swayed by the advice of well-meaning friends, he absolutely refused operative interference of any kind.

CASE VI.—Mrs. H., aged 38 years, housewife, married and the mother of four children. This case was one of exceeding interest to me. Dr. Eugene King, of this city, telephoned to me one Friday afternoon in July that he had a case of vesical calculus on which he was going to operate the following Monday, and that he wisht me to see the case with him at St. Joseph's Hospital for the purpose of making a cystoscopic examination. This examination was not for the purpose of confirming the diagnosis but to ascertain the condition of the vesical mucosa. The patient had been referred to Dr. King from some place in Kansas. She had had symptoms for three years preceding and the diagnosis of "stone" had been repeatedly made. Her subjective history was a classical one, and Dr. King informed me that he was able to find the stone with the searcher. The following day I saw the patient with Dr. King. On account of the great tenesmus bespeaking an acute cystitis, it was deemed advisable to place her under a general anesthetic, chloroform being used.

I was greatly surprised on looking thru the cystoscope to see a vesical mucosa only slightly congested. I made a thoro intravesical examination without finding stone or any evidences of cystitis. My examination was confirmed by both Dr. King and Dr. Binnie, who happened to be present. The cystoscope was withdrawn and a searcher introduced, but no click was elicited. In withdrawing the searcher I caught a glimpse of a hyperemic spot just within the meatus. A meatus speculum was introduced and just within the meatus was found a zone of ulcerations, beautifully markt. These ulcerations bled easily. A Koch endoscopic tube was introduced, and the remainder of the canal was found free from trouble.

The urethra was well dilated and the ulcerations rubbed with iodoform. The progress of the case towards recovery was fairly rapid, and with the disappearance of the ulcerations all vesical symptoms subsided. I at this time made the diagnosis of urethral tuberculosis by exclusion and the clinical evidence, and tho no microscopic confirmation was secured, I feel justified in reiterating this diagnosis. Senn, in his admirable work on urogenital tuberculosis, notes a similar not uncommon form of tuberculosis. Koenig, also, I believe, reports a case almost identical with this; and even so skilled a diagnostician as Dupuytren cut a child two and a half years old for stone under similar circumstances.

Dr. King's diagnosis by means of the searcher must have been based on a grating sensation imparted by a deposit of lime-salts on the mucosa, tho the cystoscope did not show such a concretion; but I am informed by Dr. King that subsequent to the examination the patient passt considerable crystalline matter.

My object in reporting the above cases is to draw attention

to the fact that urogenital tuberculosis is by no means uncommon, and that next to the gonococcus the bacillus tuberculosis is the most common etiological factor in urogenital troubles. This statement may seem absurd, but a close study of the field will, I think, bear me out. The cases herein reported were compiled within a period of about three months. I will say here that within the same period I saw three other cases of urogenital tuberculosis, two clinical and one private. These cases are not included within this report for lack of sufficient data.

I should suggest that a little more careful examination would reveal the tubercular character of a large number of obscure urogenital troubles, and I should furthermore like to emphasize that a negative microscopical finding by no means negates tuberculosis. Indeed, it is but in about one case in five of kidney, bladder or urethral tuberculosis that a microscopical urinalysis will reveal the bacillus tuberculosis. In but one case of my reported series was there any evidence of general tuberculosis, and but one case gave anything suggestive of tubercular family history. A peculiarity to which I simply wish to call attention is the fact that in the three cases of original epididymal tuberculosis herein reported all three had the right epididymis as their starting point. I have now another case in which I suspect epididymal tuberculosis, and in this case, too, the globus major of the right epididymis is the fons origo.

The epididymis seems to be the favorite location in cases of original urogenital tuberculosis. This statement is supported by Senn, Councilman, Reclus, Murphy and Saleron and by the experimental investigations of Baumgarten. Virchow, Koenig and Kocher hold that the infection is always a descending one, but the clinical evidence seems to support the views of the former investigators.

The prognosis of cases submitted to early operative interference in the epididymal form is good, over sixty per cent remaining free from the disease. It has been also noted that orchidectomy in cases of epididymal tuberculosis with distant tubercular deposits has a markt inhibitory action on these distant foci. Case I of my series is a striking example of the effect of operative procedures on lesions distant from the field of operation.

The clinical evidence in all reported cases leads to the belief that early conservative operative procedures are indicated where possible. The ultra-conservative views of Verneuil and Koenig, who are content in cases of epididymal and testicular tuberculosis with hygienic treatment alone or combined with curetment, have little to recommend them. Left to the vis medicatrix naturae the prognosis in urogenital tuberculosis is hopelessly bad.

If I should urge anything in concluding this paper, it would be the early diagnosis of these tubercular conditions of the urogenital tract, and that we should keep in mind at all times the possibility of tubercular infection. In other words, in all cases of urogenital disease where the etiology is obscure we should suspect tuberculosis, and I am of the opinion that in a great majority of such cases our suspicions will be confirmed.

THE MIDWIFE AS A CAUSATIVE AGENT IN GYNECOLOGY.*

BY JOHN C. MURPHY, M. D., ST. LOUIS, MO.,
President of the St. Louis Academy of Medical and Surgical Sciences; Gynecologist to the Woman's Hospital.

The writing of this paper was inspired by some recent experiences, in which the midwife played a leading role.

To the conscientious practitioner there is no department of medicine calling for more serious thought, dexterity and skill than that required at the bedside of the parturient woman. There is no other instance in the various fields of medicine where two lives are placed in jeopardy at the same time. While parturition is a natural process, around which nature places certain safeguards, womankind has become such a distorted, unnatural product in its attempt to conform to certain social and esthetic demands of modern civilization that its own creator would not recognize it as his presumed "masterpiece." When Robert Burns wrote: "God tried his 'prentice hand on man and then he made the lassies, oh," he had in mind the bright-eyed, rosy-cheeked, active, Scotch maidens of his own time, whose beautiful, symmetrical figures were Nature's gift, and not the product of the modiste's skill or the corset-maker's art. He wrote of women to whom life was a joy; of women whose blood courst thru their veins in a never-ending current of richness and of health, leaving the delicate tint of the rose on the cheek, and the light of intelligence in the eye. They were not bound in strips of steel, nor were their thoracic and pelvic organs distorted and twisted out of all normal relationship by an irrational mode of dress. If our women of today were like the women immortalized by Burns, they could have their children with little fear of danger.

But while woman is herself responsible for many of her own troubles it does not excuse ignorance on the part of those who are called to minister to her in her time of need. There is no denying the fact that if the obstetricians were more skillful and careful in the discharge of their duties, the gynecologists would not be very busy. I believe that the unskilled midwife is responsible for more suffering, pain and agony than the bubonic plague and Asiatic cholera combined! The plague victims die and are soon out of their misery; but the midwives' victims frequently live to drag out a weary existence or to furnish material for the gynecological operator. And when we learn of her practices we feel it is not strange that such is the case. What does the illiterate ignoramus who frequently cannot write her own name know about the technic of obstetrical science? What knowledge has she of the dozen or more micro-organisms capable of establishing a possibly fatal infection? What does she know of surgical asepsis and antisepsis? What knowledge has she of the anatomy and physiology of the generative organs and their relation to one another? Who ever heard of a midwife who knew enough to repair unavoidable injuries to the parturient canal; or even to recognize them so that one more skilled could do so? No! practically all of them know absolutely nothing of even the fundamental principles of their chosen calling; and still they are allowed to murder confiding women and slaughter defenseless infants! A woman is much safer with a well-trained nurse in attendance than in the hands of the average midwife, as the nurse is usually a young woman of active, receptive mind, and has had the advantages of a hospital training, as well as learning the lesson of surgical cleanliness—which is an undevelopt trait in the character of the average midwife. Where there is the least departure from the normal the midwife becomes a menace to mother and child, since, as a rule, she cannot recognize faulty positions or unusual presentations, and does not know how to remedy them if she could. But what has appealed to me most strongly is her utter lack of cleanliness in otherwise normal labors. She frequently infects a patient who would otherwise have an uneventful convalescence were she left alone. She does not seem to know that normally the vagina and uterus are free from disease-producing bacteria, and should be kept so. She does not seem to realize that enough germ-reeking filth is hidden beneath her finger nails to infect a regiment of women. The only drug she has any knowledge of is ergot, which, in her hands, becomes a weapon of destruction instead of a protector.

I was called recently at 3 o'clock in the morning to see a woman in labor; she had been in the hands of a midwife since 7 o'clock the previous evening. The midwife met me at the door and said that everything was all right, but that the labor was "slow." She had tried to apply forceps, but had failed to deliver. I found the woman lying on an old "comfort" in a lot of fecal matter; the umbilical cord was protruding thru the vulva, with the fetal head pressing firmly against it. Presently pains came on, and the fetus was expelled—but dead with a broken neck! Now, could not this baby have been saved? It undoubtedly died from the prolapsus of the cord, which might have been remedied; but to make her ghastly job complete, the midwife had broken the neck in her faulty attempt at instrumental delivery; and, besides, in the words of the patient, she had been "digging at her" for five hours. She had made repeated examinations which were unnecessary, and the only precaution she took against infection was to wipe her dirty hands on the gingham apron she wore. The patient fortunately did not develop any fatal septic condition, but it was more by the kindness of Providence than otherwise.

It is not strange, in the light of such experience, that sterility is on the increase, and that there are almost as many tubes and ovaries preserved in alcohol as are found in their natural location. The midwife and the gonococcus are running a close race as to which will contribute most to the gynecologist's support. But the midwife, with her armamentarium of filthy douche-bags, dirty hands and clouded intelligence seems to be in the lead.

Another case of more unfortunate issue occurred in the practice of an acquaintance. He was called in the night to see a woman in labor, the midwife attendant telling him that the pains had ceast some hours before, and she had been giving doses of ergot to induce labor. The doctor ran his hand over the abdomen and felt a foot beneath the abdominal wall; the uterus had ruptured, and a portion of the fetus escaped into the peritoneal

*Read before the St. Louis Academy of Medical and Surgical Sciences.

cavity. He hastily delivered the fetus (dead), and the mother died a few minutes later before any steps could be taken for her relief. Postmortem examination showed the uterus to be ruptured and the abdomen full of blood.

Here is a case where the injudicious use of ergot undoubtedly caused death. If the douche and ergot were prohibited except in case of hemorrhage, the midwife would be much less dangerous than she is today. Obstetric douching has become an almost obsolete practice with those who know how to be clean. The uterus is normally free from germs, and if puerperal fever develops it is usually the fault of the attendant. I believe that if the external genitalia be made clean and kept so, and the attendant uses the same care in the preparation of his hands and arms that he would for abdominal operations, the uterine cavity can be entered for the various obstetrical operations (such as version, removal of retained placenta or combatting post-partum hemorrhage), with the same impunity that we invade the peritoneal cavity for surgical procedure. I have not doucht an obstetrical patient for several years; neither have I had a puerperal fever develop during that period.

I am aware that there is nothing specially new in this paper; but I cannot refrain from raising my voice in protest against the many wrongs perpetrated against womankind in the guise of kindnesses. If there must be midwives let us compel them to be better educated; let the importance of their work be impresst upon them; make them learn how to be surgically clean; and how to give proper care to the lying-in woman; have them taught to recognize abnormal conditions, so that proper aid may be had in time. If all these faults were remedied fewer women would be cut down in the flower of their youth; fewer orphan children would be in the asylums or running wild on the streets; and the young wife would not be ruthlessly torn from the husband's arms to be cast into the tomb, at the very moment when all should be joy instead of sorrow.

INTRAUTERINE FIBROIDS COMPLICATING PREGNANCY.*

BY MAGNUS A. TATE, M. D., CINCINNATI, O.

The literature of this subject is very meager. Either such cases are very rare or those who have encountered them have failed to publish their experience. Dr. J. Halliday Croom was able to collect 21 cases up to 1885, which he groupt as follows: (1) Non-gangrenous cases, in which a healthy tumor was expelled without any artificial aid, 5; (2) gangrenous, 6; (3) gangrenous or non-gangrenous removed artificially with hand or instrument, 10—total, 21.

To this list I have been able to add 15 more cases, in addition to my own—presently to be reported—a total of 38.

Before recording my cases it may be well to present a few facts. Intrauterine fibroids complicating pregnancy may give rise to hemorrhage before, and often to alarming hemorrhage after, the birth of child and placenta, as some of the cases reported show. It is reasonable to suppose that the presence of a foreign body in the uterus, such as a fibroid, will naturally interfere in many cases with the child assuming the normal position, and that the breech may present nearly as often at the vertex. It is also reasonable to suppose that an intrauterine polypus (and especially if it be of any size) will be a prime factor in the causation of an interruption of pregnancy, and this is shown in the history of some of the cases mentioned; but, on the contrary, Lefour (who is quoted by Budin) shows that pregnancy is not interfered with, however profuse the hemorrhage. If hemorrhage does occur it often corresponds to the menstrual epoch, and, unless excessive, simulates menstruation, and in this way is misleading. Hence a proper diagnosis is not made (if at all) until after an abortion, late in pregnancy, or after birth of child and placenta. In cases where pregnancy has gone to full time it is surprising to note that so many of the labors were normal, the polypus not being discovered until after the birth of the placenta, when one would expect that labor would not only be difficult and prolonged, but that there would be a further complication, namely, that of improper contraction of uterine muscle. Whenever involution is interfered with a secondary hemorrhage is a common sequel. The results of feeble contraction of uterus during labor, and improper involution afterward, may be contamination of blood clots and a gangrenous polypus (especially if there has been any injury during labor), and these in turn followed by sepsis. If added to this the placenta in part or whole be retained, the patient is indeed a fortunate woman if she escapes from death from severe septic poisoning. When there is much disturbance of pelvic circulation, it is followed by a serous infiltration which gives rise not only to a slight enlargement and softening of polypus, but the uterus becomes heavy, boggy and flaccid, and so does not contract properly to any form of treatment; and this explains why the patient succumbs to uncontrollable hemorrhage. In a few cases the tumor extrudes spontaneously from the uterine cavity, and then it becomes a simple one to manage, ligate and cut off the pedicle. If the os is not yielding and growth remains in the uterus, it is very difficult, if not impossible, to remove. Here the wisest course is to let it alone and not resort to any surgical measure. The placenta remaining in the uterus which contains a intrauterine fibroid is a serious case, for the longer it remains the greater the danger, primarily of hemorrhage and secondarily of sepsis. Hence the sooner the placenta is removed the less the danger, the better the treatment, the easier the patient's mind, and the surer the chance of recovery.

CASE I.—Patient aged twenty, at the Ohio Maternity Hospital. First and second stage of labor normal. Child lived ten days. Placenta could not be born even after repeated efforts with Crede method, and, as there was little or no hemorrhage, patient was allowed to rest. In two hours the nurse called interne's attention to a slight hemorrhage. I was immediately summoned and found patient had had another flooding spell (much more severe than the first) just before my arrival. The placenta was still in the uterine cavity, and as two hemorrhages had occurred, the last one quite severe, the time for temporizing had passt, and so I proceeded to deliver the placenta. Patient was prepared for operation and as the anesthetic was being given bleeding commenced, and almost simultaneously and following this bleeding a terrific gush of blood poured out from the uterine cavity. As I began to introduce my hand the anesthetist told me that patient was dead and ceast the chloroform; but this proved to be a false alarm. I proceeded with the operation, but did not administer any more chloroform. Partly blocking the os was a hard, round mass which felt at that time like a premature fetal head, and at its side was an enormous clot of blood. Cleaning out the blood clot, I was able to introduce fingers and then hand into uterus, and then I found out that I was dealing with a polypus half the size of a fetal head, and at its base was the placenta encircling it. By this time patient began to rally, and as she did so another violent hemorrhage took place, so I forced my whole hand into the uterus, grasp the polypus and placenta and delivered by twisting the whole mass. Patient gave one scream that she was dying and passt into a deep faint. Polypus and placenta were delivered, but nearly at the cost of the woman's life. Hemorrhage at this time was so frightful that it was almost indescribable, but at last the uterus was packt with plain gauze, patient given hypodermatics of strychnine and whisky, salt solution was injected, the head lowered and feet elevated, and heat applied externally. The pulse was now imperceptible, but the heart could be felt to beat in an irregular and feeble manner. The outlook was anything but encouraging, but she slowly rallied, and in three hours pulse could be felt at the wrist. For two days patient slowly but steadily improved, and on the third morning I attempted to remove the gauze packing. As I did so another hemorrhage took place, so I desisted, and it was not until the tenth day that I could remove all of the gauze. The temperature and pulse steadily increast from the third to the seventh day, when the temperature was 105 degrees and pulse 140. For the next six weeks her temperature ranged from 103 degrees to 105 degrees and pulse 120 to 150, and she had a very offensive discharge from the uterus. Temperature and pulse began to decline the seventh week, and at the end of the twelfth week the patient left the hospital, with temperature and pulse normal, but she was very weak and emaciated.

CASE II.—Patient, aged twenty-nine, had been pregnant twice, had had two miscarriages, and was now pregnant for the third time. First miscarriage two years ago, in which no difficulty was encountered, but during the second one, some ten months afterward, there was quite a loss of blood and a retained placenta, which was extracted, and this was followed by a long spell of fever. At this the third miscarriage child was about six and a half months old and the placenta could not be expelled. Dr. Dunlap, who was in charge of case, made repeated attempts at delivery, but was unsuccessful, and as there were no untoward symptoms, the placenta was allowed to remain in the uterus with the hope that Nature would accomplish what external manipulation could not do, namely, expel the placenta. For ten days the placenta remained within the uterus and no symptoms de-

*Abstract of paper read before the American Association of Obstetricians and Gynecologists.

velopt; the woman seemingly apparently well. On the morning of the eleventh day pulse was 100 and temperature 100 degrees, and then I saw the patient for the first time. I, like Dr. Dunlap, tried external means to deliver, but could not do so, and after preparation, I operated. Chloroform was administered. The os would not allow more than the introduction of one finger at first, but by perseverance I was able to insert three fingers into the uterus. Finger tip came in contact with a hard mass the size of an orange, and back and partly around it I felt the placenta. Finding that I would be unable to deliver with fingers, I inserted placenta forceps and delivered polypus and placenta piecemeal. Having removed all of the mass that I could feel, and as the hemorrhage was quite profuse, I hurriedly packt the uterine cavity with plain gauze. The second day after delivery, and the thirteenth day after beginning of miscarriage, temperature was 102 degrees and pulse 110, following day each 100, and from that time on temperature and pulse ranged from 90 down to 70 degrees time on temperature and pulse ranged from 90 down to 70 for pulse for temperature and 99 degrees to normal for temperature. Three weeks after that both were normal. During these three weeks patient had a discharge composed of a mixture of blood, pus, masses of placental tissue, and portions of palypus, and it was so offensive that it polluted the bedding and carpet so that both had to be burned after the patient's recovery. Such an offensive discharge I never before smelled, and yet with such a condition (barring the odor) patient was comparatively comfortable and temperature and pulse good, the former never above 102 degrees and the latter more than 110. Under treatment the discharge gradually decreast, and the odor lessened, and in one month patient was able to do light housework.

APPENDICITIS.

BY HAL C. WYMAN, M. S., M. D., DETROIT, MICH.,
Professor of Surgery, Michigan College of Medicine and Surgery.

At a meeting of the Michigan State Medical Society a back-country doctor from the lumber woods was askt by a young assistant from one of the big Detroit surgical clinics what he thought about "interval operations," and when was the proper time to operate for appendicitis, generally. "When one practising in the great lumber camps of our forest regions speaks about this disease the surgical world will listen." The inquiry was made patronizingly and in a spirit of facetiousness. "Yes," replied the doctor, "we see some cases of inflammation of the bowels, for which we have a wholesome dread. If we do not operate upon these cases directly the perforated appendix is discovered by palpation and the history of the attack, we lose them. But there are other cases of a milder type in which the perforated organ is envelopt in an abscess. These we operate on and evacuate the pus, and if the organ is free and easily accessible in the abscess cavity, we take it out. We do not expect to lose many such cases, because our patients are generally hardy young men, and we operate on them in their homes, boarding houses and camps, wherever we find them. Our people are not afraid of their sick friends. Nor are they desirous of shirking the natural responsibilities of sickness. They love one another, and when one is sick, all are ready and willing to do what is best to do for his recovery. They are used to plain living and simple care. Our doctors always find splendid nurses among them. So many of their friends have been brought back from the city hospitals to be buried that they have learned to know that the best place to be operated upon for appendicitis is in one's home—even if it is a camp. The hospital of the city is all right for the purposes for which it was intended, a place to care for the sick who have no homes and no money. But when it attempts to supplant the home as the best place to practice surgery, it is all wrong. A surgeon who cannot do as good and safe an operation in the sick man's house as he can do in the best public hospital ought to be compelled to spend the remainder of his days in instructing the people of this smiling land how to improve their homes."

And the woodman continued: "I must be clear on this point, for I believe that the mortality rates of city hospitals are frightfully increast by operations upon patients who have been hustled out of their homes and taken to the hospitals. Surely no man of sober thought will say that the sick man's chances of recovery from the illness due to an ulcerated and perforated appendix vermiformis are improved by a jolting journey by rail and ambulance. The question of when to operate for appendicitis has been subverted by the question, Where to operate? I can readily see that a nice point might come up in connection with the first question, but the second one involves a different proposition and means really two things, viz.: are the surgeons who practise at our bedsides competent to do this operation? and are the people of the homes willing and competent to give the patients a few days of care and attention that are needful for their recovery? All the talk so freely indulged in about antiseptic preparations is merely begging the question, for a bedroom or kitchen can be made suitable for clean surgery just as well as a hospital ward or operating-room."

Overhearing the above, I was much impresst by the statement of the backwoods physician. His remarks contain much food for thought as well as a crying protest against indifference and neglect.

When to operate is determined by the conditions of the case. If there is pus, operate. If there is fever and vomiting, operate. "Obstruction of bowels" gives the key to urgency for operation. Consequently, in the treatment by anodynes, we must be cautious not to mask the symptoms so that an obstructed intestine will be overlookt. Often a fatal termination is due to a single leaf of bowel compresst by inflammatory products about a diseased appendix. An operation, if made early, obviates this danger. I do not think many cases of appendicitis end in death when the bowels are unobstructed.

A time-honored rule of practice is to discover, if possible, the way an illness is most likely to destroy the patient, and do everything that promises to avert the tendency to death. It is the retained and absorbed toxins in the intestines that kill in obstruction of the bowels. Therefore, we should operate to anticipate that condition when the history of the case and physical signs say it threatens.

And what of the history? A patient sick—sick enough to call a doctor, pain anywhere in the abdomen, and sometimes severe, interrupted attacks of it, but nearly always in the right iliac fossa. Pulse disturbed and quick—the pulse of inflammation. Temperature may or may not be elevated. Respiration more or less hurried and related to the pulse. Sometimes the story of the case includes a long recital of vague dyspeptic symptoms. The physical signs are usually localized tenderness in the region where pain is located. There is also more or less muscle-resistance to the hand or finger feeling and pressing the affected region. Sometimes it will vanish for an instant and the feeling finger will drop to the floor of the iliac fossa and distinctly trace the area and boundaries of the inflamed appendix with accompanying serum, pus, and adhesions. In such a case, it is our duty to operate and relieve the deep tension before the situation is complicated by obstruction of the bowels. But it will not do to put such a case on a train or in a vehicle and rush him to a hospital. The journey may do him grave injury. It is better to clean his abdomen with soap, sublimate and alcohol; get clean, fresh sheets, sterilize one's instruments, and be sure to clean the hands as thoroly as the patient's abdomen. Then the nearest competent surgeon should operate by cutting directly down upon the mass felt in the abdomen, and relieve the tension by evacuating any inflammatory fluids. The finger should then be introduced, and if the offending appendix can be brought up it should be tied close to the cecum, and cut off. The wound should be then, with a short drainage tube, so located that it will most efficiently perform its purpose with the least danger of irritating coils of intestine. If the appendix is inaccessible, being bound too deeply or behind the cecum by adhesions, and the operator has opened the way for free discharge of accumulated fluids, he may rest content—even at the risk of doing a subsequent operation in case progress to recovery is not satisfactory.

If one has a case already suffering from the vomiting peculiar to obstructed bowels it is necessary to restore the normal current of the intestinal stream by freeing the adherent and compresst coils of intestine, and if that is impracticable, an enterostomy or intestinal fistula must be made. These procedures may be difficult. They must not be nullified by packing so much gauze into the wound during the dressing that the intestine is again compresst.

Nor shall one poison the patient with narcotic doses from the hypodermic syringe, simply because his pulse flutters and he grows pale when adherent bowels are separated to permit the onward flow of the intestinal contents. Better to use strychnine and calomel and moist heat to stimulate a flagging heart muscle and overwhelmed organs of elimination.

There is no reason for assuming that peritonitis caused by a leaky vermiform appendix is different from other peritonitis, except in its causation. There the matter ends, unless one has a case on which he proposes to perform a surgical operation. Then it is necessary to know, approximately at least, just what lies in the affected region and how best to circumvent the damage

caused by it. An ideal operation contemplates the removal of the cause of the peritonitis, and so does an ideal operation in cerebral surgery contemplate the removal of the cause of compression of the brain, but it does not follow that one must remove the whole calvarium; elevation of the depresst fragment of bone, or removal of clot, pus, or tumor, commonly suffices to restore the functions of the brain. In the same sense one should remove the appendix, if its presence is a continued menace to the patient. Unyielding principles should actuate the surgeon in all cases of peritonitis, but every case does not demand the immediate removal of the appendix vermiformis, even when there is no other cause of the disease.

Some who are not as cautious and discriminating as they might be advise an iron-clad rule of practice and operate on every case as soon as they can get it to the hospital. Others let their patients die under a senseless procrastination, sometimes miscalled conservatism.

The profession generally has little sympathy or respect for men who allow the golden moment for the performance of safe and clearly indicated operation to pass by, unheeded and unused. It expects its members to determine beyond any reasonable doubt that they have to deal with a case in which the morbidity of the appendix has caused peritonitis; then they should proceed to operate on the patient in his home and with as little ceremonial flourish as possible.

SOME ANOMALIES OF APPENDICITIS.*

BY ERNEST LA PLACE, M. D., LL.D., PHILADELPHIA. PA.,
Professor of Surgery in the Medico-Chirurgical College.

Appendicitis is not always easily diagnosticated. There are certain anomalies which may render recognition of the disease unusually difficult.

LOCATION OF THE APPENDIX.

The appendix is not always located in the right iliac region. Twice I have found it adherent to the liver; once to the gall-bladder; twice to the urinary bladder. In very stout patients a certain degree of enteroptosis is present and this changes materially the location of the appendix: One may then find it in any part of the abdominal cavity, according to the particular location in which the ileocecal region has accommodated itself. Under these circumstances the location of pain becomes a very obscure matter. It may be found at any portion of the abdomen, radiating in various directions.

PECULIARITY OF SYMPTOMS.

It is now generally conceded that appendicitis is due to an infection with some of the pus-producing micro-organisms. It is not so generally known that the severity of the attack and the character of the symptoms may vary greatly in accordance with the peculiar behavior of these bacteria. In studying this feature it is necessary to consider: (1) The varying virulence of the bacteria and their toxins during the course of an attack; (2) The reaction of these on the tissues, producing the histologic changes that extend from the fulminating gangrenous form, which is expressive of the most violent and acute inflammation, to the so-called "appendicitis obliterans," expressive of the mildest type of irritation and producing a chronic inflammation.

Like the colon, the appendix has a serous, a muscular coat (consisting of transverse and longitudinal fibers) and a mucous membrane, which has tubular glands and lymphoid tissue. At its opening into the cecum is a fold of mucous membrane—the Gerlach valve. The movements of the appendix are partly restricted by its meso- appendix, which does not always extend to its tip; as a result of which the appendix may curl upon itself during its vermicular movements. The histology of the appendix shows that, like all functionless organs, leading a retrograding existence, its self-protecting properties from circulation and phagocytosis are also restricted. With these premises we may assume:

1. That all the bacteria found in the diseased appendix are also found in the healthy appendix and colon.

2. That a higher degree of virulence is the only cause whereby these organisms irritate.

What, therefore, are the causes of the increast virulence of the bacillus coli or the streptococcus? We know that an acute diarrhea or enteritis gives symptoms quite comparable to appendicitis, only more widespread; but the bowel soon rids itself of the irritating fluid material, germs and all. In the appendix, however, drainage may not be possible; and if so, trouble begins. The micro-organisms which irritate the appendix just as they do the gut, produce a swelling of the mucous membrane of the appendix, which tends toward occluding its lumen at any spot along its course, but more especially at its base, where is located the fold of mucous membrane known as the valve of Gerlach. It is then that the retained germs, growing in a limited area, rise in virulence, gradually; and at times produce a toxin so virulent as to cause the same destructive changes in the substance of the appendix as would be produced by nitric acid; a gangrene en masse. The streptococcus is chiefly responsible for this type. Every one of much experience is familiar with this form of disease: the pain and rigidity of the right iliac region—sometimes of the whole abdomen—the high temperature and rapid bounding pulse.

But when appendicitis is due to infection with the bacillus coli communis quieter symptoms are met, especially at the outset. It is apt to occur in connection with the presence of an enterolith or fecal concretion in the appendix, the latter being the result of a long-continued retention of feces in the appendix, antedating the present attack. Here, according to the virulence of the toxin generated by the organisms, within and around the fecal concretion, will the case result in a local gangrene surrounding the area of the concretion, or else the toxins being of a milder character, simply keep up chronic irritation of the appendix, resulting in adhesions of the appendix in various positions, and also excite a perityphlitis, causing adhesions of the colon to neighboring structures. It is this type that results in the so-called obliterating form of appendicitis; that is, the irritation (constant, but never very violent), has succeeded in destroying the mucous coat at the bottom of the appendix, caused granulations to form and an adhesion of the sides from the bottom up, exactly after the cicatrizing manner of a wound which we force to heal from the bottom by packing. In this instance extra-appendiceal abscesses may also occur, either at the base bounded by the ileum, colon and omentum, or even at a distance in various positions of the abdomen.

Here comes a most important complication which so often veils the clinical signs to be expected from such an infection as has just been described; that is, the presence of a mixt infection. The streptococcus may suddenly appear and give to the mild type an acute exacerbation; the temperature, heretofore ranging between normal and 100 degrees Fahrenheit, may take a much higher course with a corresponding modification of the pulse.

When chronic adhesions have existed and the spot then becomes one of least resistance, it also becomes a favorite soil for the development of the tubercle bacillus; hence the type of chronic abscess, much like the ordinary "cold abscess" which may be found in connection with a diseased appendix. Sometimes the appendix has entirely disappeared or disintegrated in the tuberculous process, and nothing but the so-called "pyogenic membrane," tough and unyielding, is present, the colon and ileum in that region being also maskt by it.

ABORTIVE TREATMENT.

Finally, cases may present a combination of these various types to such a degree that it is perfectly safe to state the following as an axiom: At no time during any attack of appendicitis is any one sure of the extent to which the appendix is diseased. If the infection were always a simple one clinicians might in time acquire such knowledge, but the constant possibility of the infection being of the mixt variety, giving most irregular symptoms, as to pain, temperature and pulse, and especially resulting in an uncertain condition as to the histologic integrity of the appendix, it follows that appendicitis is, of all diseases, the most anomalous.

Unlike most diseases, however, there is for appendicitis a positive and safe abortive treatment. By abortive treatment is meant such as will destroy an affection at its inception—not when it has run its course almost to a fatal termination. An early and clean extirpation of the appendix as soon as possible after the diagnosis is made is the only positive and safe abortion of this disease, of which no man knows the course it intends to run in any given case. Appendicitis is absolutely a surgical disease. It does now and then tend to a spontaneous cure, as a boil now and then undergoes resolution without suppuration; but even in these cases painful adhesions remain, which may at last demand the help of surgery.

*Abstract of article read before the American Medical Association.

ABDOMINAL SECTION FOLLOWING SO-CALLED "VAGINAL PUNCTURE," WITH REPORT OF CASES.*

BY JOHN YOUNG BROWN, M. D., ST. LOUIS, MO.,
Fellow American Association of Obstetricians and Gynecologists; Ex-President Mississippi Valley Association, etc., St. Louis, Mo.

An extensive operative experience has convinced me that in a large majority of cases of pus in the pelvis, the condition can be dealt with more satisfactorily thru a suprapubic incision. Thru this incision radical and complete work can be done; bowel, bladder and omental adhesions can be properly handled; and the appendix, which is frequently involved in such cases, can be removed. In other words, the suprapubic operation enables the surgeon to do thoro work under the guidance of the eye, and is the operation of election in a large percentage of cases. It is not my purpose to discuss, in this paper, the relative merits of the vaginal and abdominal routes in dealing with puriform diseases of the uterus and its adnexa. Both methods have their advocates, and while I am wedded to the abdominal route, believing it to be the only method by which we can do complete surgery, yet I must admit that the vagina affords simple and easy access to pelvic pus-collection in a selected variety of cases in which an approach from above would be hazardous.

Within the last eighteen months I have operated sixteen times by simple vaginal section with drainage. All of these patients at the time of operation were profoundly septic, with rapid pulse, leaky skin and large pus sacs low in the pelvis—many of them too ill to remove to a hospital. All were treated by free, wide posterior vaginal section and drainage. Of the sixteen cases nine fully recovered; two are still under treatment; five have since been operated on from above—with radical removal of tubes and ovaries, and in three the appendix—four by myself and one by Dr. Joseph Price of Philadelphia. These cases present an interesting series, and they demonstrate at once the value of the drainage operation, not only as a curative, but as a palliative procedure, for not one of the cases here reported, on whom the radical operation was subsequently performed, could have survived a primary abdominal section. The mortality following abdominal section in such cases is from fifteen to twenty-five per cent. The mortality following drainage is less than two per cent; and while many of them, treated by the latter method, must necessarily undergo a second operation after they have recovered from the acute sepsis, we can but admit that two operations with a live and cured patient as a result is better than one operation from which the patient dies. Those who advocate the treatment of all pelvic pus-collections from above frequently refer to vaginal section as "vaginal puncture." This is unjust, as no one would think of making a mere puncture into a large abscess. In dealing with pus here, as in other parts of the body, the incision should be free—sufficient to introduce two fingers and large enough to admit of the introduction of a good-sized drain. The following cases I beg leave to report:

CASE I.—Blanche P., age 30, mother of three children, youngest two years old. Six weeks prior to my seeing her, she had had an abortion at the eighth week. Since that time she had gradually grown worse, and when seen by me was pale, profoundly septic, pulse 128, temperature 103½. On examination I found a huge fluctuating mass behind the uterus, extending well above the brim of the pelvis into right iliac fossa. After cleaning the patient up, she was placed upon the table and a free opening made into the cul-de-sac—about two quarts of pus evacuated, the cavity washt out and a gauze drain placed. Improvement was rapid, acute symptoms quickly subsided, fistula and discharge persisted, with mass on right side and considerable thickening in region of appendix. Eight weeks after primary operation, I opened the abdomen, removed both tubes and ovaries and the appendix, which was buried in a mass of adhesions with right tube. The patient made an uninterrupted recovery, and is now in good health.

CASE II.—Minnie K., age 19, single; history of gonorrhea. Five weeks prior to my seeing her, she was curetted, which operation was followed by a violent pelvic peritonitis. When seen by me she was pale, emaciated, with pulse rapid, abdomen distended and skin leaky. On examination, I found a large mass behind the uterus, fluctuation well markt. The vaginal section evacuated about a half a pint of pus. She improved slowly, uterus remained fixt, with mass on both sides. Two months after primary operation I enucleated both tubes and ovaries. Large tubo-ovarian abscess on right side, appendix six inches long, tightly adherent and badly disorganized. Recovery followed and patient is now in good health.

*Read before the Mississippi Valley Medical Association.

CASE III.—Mrs. K., age 32. When seen by me she had been ill for five weeks following what was supposed to have been an abortion, for which she was at the time curetted. Her condition was pitiful: She presented the usual picture of profound sepsis. A large fluctuating mass, to the left and behind the uterus was widely incised, evacuating the contents of a suppurating pelvic hematocele. The improvement in the case was markt and immediate. She rapidly gained strength. Her pelvic trouble, however, persisted, and nine weeks after the drainage operation I opened the abdomen, enucleating both sides, with the appendix, which was sufficiently diseased to warrant its removal.

CASE IV.—M. H., age 22, had gonorrhea one year ago. She had had repeated attacks of pelvic peritonitis, had been curetted twice, the last curettment having been done two weeks prior to my seeing her. I found her septic and leaking. A large mass, pointing in Douglass cul-de-sac, was incised and drained. She improved rapidly, but sac refilled, necessitating dilatation and frequent washing. I therefore opened the abdomen, three weeks after the first operation. I found many bowel, omental and bladder adhesions. I removed the adnexa of both sides. Her recovery was slow, but progressive, and the patient is now in good health.

The case operated on by Dr. Price, of Philadelphia, presented a history very like the ones above reported. She had been for several years the victim of frequent gynecological abuses, including the use of the curet and the application of caustic to endometrium. Dr. A. V. L. Brokaw, of this city, saw her in consultation with me, and we agreed that a primary section was out of the question, the patient being profoundly septic with a huge fluctuating mass pointing low in the pelvis. This was freely incised, and improvement was rapid. Several months afterward, while in the East, she was again taken ill. I referred her to Price, who did a radical operation, removing both tubes and ovaries, with the appendix. She is now in excellent health.

An analysis of the histories and pathological findings in the cases above reported is interesting. It shows: (1) the frequency in which the appendix is involved in cases presenting pelvic lesions. This is a strong argument against the method which proposes to radically deal with cases of this character thru the vagina. (2) It shows the futility of attempting the cure of most cases of gonorrheal origin by any method short of radical suprapubic enucleation. (3) It illustrates the danger of the curet when there is involvement of the tubes, unless the curettment immediately precedes radical operation. Some of the worst cases of pelvic peritonitis it has ever been my misfortune to deal with, have come with a history of curetment.

In conclusion, I wish to say that my purpose in bringing this subject before the society has been with the hope that my remarks would cause a discussion of this important subject; and also to take issue with those who contend that the drainage operation has no place in pelvic surgery.

WOMAN'S HOSPITAL REPORTS—UTERINE FIBROIDS COMPLICATING PREGNANCY.

BY EMORY LANPHEAR, PH.D., M. D., ST. LOUIS, MO.,
Chief Surgeon of the Woman's Hospital of the State of Missouri.

According to the records of the medical press, fibroids of the uterus complicating pregnancy must be an extreme rarity. Dr. Magnus A. Tate, of Cincinnati, in a paper presented last month, at a meeting of the American Association of Obstetricians and Gynecologists, says he was able to find only 17 cases reported since 1885, when J. H. Croom found it possible to collect but 21 cases up to that time. From my own observation I am convinced that the condition is not so infrequent as one would be inclined to believe from this paper: My first Porro operation was for large fibroid complicating pregnancy; I once operated in connection with Dr. Cordier on a tubal pregnancy with a huge fibroid (specimen is now in the museum at Barnes' Medical College); Dr. E. R. Lewis, of Kansas City, removed a fibroid tumor from a pregnant uterus, some three years ago, without causing miscarriage; in September, 1902, I made a Porro operation for Dr. H. G. Nicks, at the Baptist Sanitarium, for a fibrocystic tumor complicating pregnancy; and the following case has just been under treatment at the Woman's Hospital:

M—, a patient of Dr. C. C. Surber, of Indianola, Ia., a primapara 28 years of age, was admitted July 17th, in good health, and of excellent family history and previous health. Her first menstruation occurred at 14, without trouble, and she was regu-

lar and natural in her menses until pregnancy occurred, in January, 1902.

Labor began October 4, at 10 a. m., pains becoming regular and severe during the night; examination at 8 a. m., Oct. 5, showed the os well dilated, the bag of waters—long and conical—pressing upon the perineum and a mass not the fetal head partially filling the pelvis. She was anesthetized and the membranes ruptured. A submucous fibroid with sessile base, hard presst by the on-coming head, was with difficulty pusht back sufficiently to permit extraction of the child with forceps. Immediately following delivery, there was a terrific gush of blood; and the placenta was therefore removed immediately by manual extraction. Its implantation, fortunately, was upon a part of the uterine wall not involved in the tumor-growth. Attempts at delivery of the tumor which had obstructed labor gave such furious hemorrhage that they were abandoned and manual compression of the fundus resorted to. Two other large masses were now discovered in the wall of the uterus—one about the size of a hen's egg, the other about that of a large orange. Uterine contraction came on speedily and controlled the hemorrhage perfectly.

Convalescence from confinement was satisfactory, but rather slow on account of the sloughing of the tumor which had been so long presst against the pelvic wall by the descending head.

Dec. 1, under chloroform, the base of this tumor was curetted away and the abdomen opened in the hope that the two remaining tumors could be enucleated, but they proved to be too deeply imbedded in muscular tissue to justify anything but hysterectomy—and as the patient had declined to submit to this procedure, the wound was closed. Recovery from operation has been ideal; and a menstrual flow just completed has been apparently normal. But the end is not yet.

ANESTHETICS AT AN ALTITUDE OF TEN THOUSAND FEET.*

BY SOL. G. KAHN, M. D., LEADVILLE, COLO.

The subject of anesthetics is one of great importance to both the physician and surgeon. This society should be congratulated upon recognizing the importance of the subject and devoting an entire evening to its consideration. I will consume the time allotted to me in reviewing the effects of anesthetics at extreme altitudes, such as we have in the Leadville district, which is from ten thousand to twelve thousand feet above sea level, depending upon the part of the camp in which we happen to be.

Chloroform is the anesthetic used to a most, if not quite, the total exclusion of all others. Physicians who have lived any length of time in Leadville have all given chloroform. All physicians located in other localities, or who have had hospital training and were ether-advocates on their arrival, after a few trials invariably renounce ether for chloroform. I have repeatedly askt physicians why they have given up the use of ether, and the universal reply has been, because patients did not take it well here, and my experience has been the same. In so dry a climate, in my estimation, ether causes greater bronchial secretion and more mucus than at sea level, and besides patients are very excitable and difficult to anesthetize. At times, when ether has been attempted, we have had to change to chloroform to bring them completely under the influence of an anesthetic. Some of the profession assert that ether causes greater nausea here than elsewhere. A large percentage of our population consists of miners, and the major portion of our emergency surgery is upon this class of patients. Their lungs do not seem to be as strong, nor are they able to take any anesthetic as well as other people. This may be explained by the fact that the constant inhalation of powder smoke, particles of rock and mineral, and the cold, damp air of our mines affect their lungs; and is, no doubt, one great reason why ether is not well borne by these people. There is also to be taken into consideration the immediate after-affects of ether, which are more severe here than at lower elevations; bronchitis and pneumonia often resulting, two patients having died in Leadville from pneumonia following operations. One a boy of sixteen, who was operated upon for inguinal hernia; the other, a woman upon whom a hysterectomy was performed. Both patients were doing nicely, so far as the results of the operations were concerned, but died from the after-effects of ether narcosis.

*Read before the Denver and Arapahoe County Medical Society, Dec. 2, 1902.

A. C. E. mixture has been so rarely administered that I am not in a position to give any data.

Ethyl chloride has never been used to my knowledge.

Subarachnoid injection of cocaine has been attempted only once, about eighteen months ago. The experiment was unsatisfactory, so further attempts were abandoned, and I am not able to state what a fair trial of the same would be.

The reasons chloroform is the preferred anesthetic are (1) on account of the taking less time to place a patient under its influence, (2) the lack of bronchial trouble, (3) the avoidance of phlegm in the throat, (4) the slight amount of vomiting, (5) the absence of nausea in many instances and (6) the rapidity with which patients come out from under its influence after the cessation of administration.

Chloroform is well borne by our patients. We are unable to notice any material difference in its administration or effects at this altitude, the difference in elevation rather predisposing in its favor than otherwise.

There have been four deaths from chloroform in Leadville in twenty-five years so far as I can learn; two males, one female and one child. The three adults had albuminuria. One man was being anesthetized for retention of urine; he had been on a protracted spree and an old stricture closed, causing inability to pass urine; an attempt made to introduce a catheter proving ineffectual, he was being anesthetized and died very promptly. The other man was given chloroform preparatory to an operation for hernia due to a previous operation for gall-stones. The woman was given the anesthetic for a celiotomy. She had a large mass in the pelvis which caused so many pressure symptoms that an operation was considered imperative. The child I have been unable to learn anything about, except that it died under chloroform. The three adults died before being completely under the influence of the chloroform, or, rather, in its early administration. The anesthetizer in each case was a different physician, and all have had experience in giving chloroform. One of them is one of the oldest practitioners in Leadville, and considered one of the best anesthetizers we have, and we all boast of being good.

It has been my aim in preparing this paper to give the combined opinion of the medical profession practising at extreme elevations in Colorado. I have, therefore, written to several physicians living in Cripple Creek and Victor, at which places the elevation is about the same as at Leadville, requesting a short resume of their personal observations with anesthetics, and particularly ether. Three replies which I received I include in this paper. These demonstrate that their experiences have been similar to ours in Leadville.

Dr. J. Ernest Meiere, of Cripple Creek, writes: "I take pleasure in giving you my experience from the use of chloroform as an anesthetic. As I have confined myself to the use of that anesthetic during my practice of twenty-five years in high altitudes of Colorado, I have no hesitation in expressing my opinion regarding its entire and perfect safety. I have continued its administration at Sisters Hospital at Leadville, for a period of four hours in a female patient, without nausea or any unpleasant after-effects. During a practice of more than nineteen years at Leadville I heard of but two fatal cases from the administration of chloroform. One was a child, one or two years of age; the other, adult, both males. I have frequently administered chloroform to infants as well as in extreme, advanced age. I have always preferred chloroform to ether, as it requires so very much less quantity, the patient is brought more rapidly under its influence, and being, as a rule, free from the unpleasant after-effects of ether, nausea and vomiting. I have never kept a record of the number of times that I have administered chloroform or have seen it given, but it must number up in the hundreds. With the precautions that I invariably observe, I would not hesitate to administer chloroform at the apex of Pike's Peak, and would have no apprehension for my patient."

Dr. Wilbur T. Liggett, Cripple Creek, answered: "Will say that my personal experience with anesthetics for the past fifteen years at an altitude of ninety-five hundred feet has been very satisfactory to me. I have used chloroform as the ideal anesthetic. This, of course, is with a few exceptional cases in which chloroform was not indicated. During this period I have used anesthetics a great number of times, and I have never had one single bad result as yet, but I cannot tell how soon my luck will change. 'Why do I not use ether?' In the first years of my practice I had to use lamps or candles, and even in the warmest days of summer, at this altitude, I found it necessary to have a fire in the room. Therefore, ether was not safe. I also found a greater amount of post-operative nausea and vomiting. I found

that miners who work underground, inhaling powder smoke, gases and dust, were more or less troubled with bronchial irritation, and ether caused a greater irritation to the tubes and lungs in those cases than did chloroform."

The letter of Dr. H. M. Cohen, of Victor, reads: "The use of chloroform is my rule, on account of the prevalence of bronchial troubles, and especially in miners, nearly all of whom have some form of pneumonokoniosis. Have in a number of cases used ether to finish a prolonged operation begun under chloroform, but do not use ether as a matter of choice, as chloroform does not so much embarrass respiration in this altitude. In my experience in a series of about two hundred and fifty cases I find that the action of chloroform differs but little here from its action in lower altitudes. There is, however, one difference; in that during the stage of excitement respiration is, in this altitude, somewhat more embarrasst. Another fact that impresses itself is the absence of post-anesthesia bronchitis and pneumonia, such as is often seen at lower elevations."

Testimony along the same lines can be produced in abundance. My own experience, gained by a practice in Leadville for about twelve years, fully bears out all of the statements of my professional brethren as above expresst; so that I can only reiterate that in high altitudes chloroform is the anesthetic of my choice, and, altho in our profession empirical knowledge is often viewed with suspicion, if not with disdain, still, in medicine as in the common affairs of life, experience is the best teacher, and when we take into consideration the number of times chloroform has been given, and the comparatively few ether anesthesias, with only four fatal chloroform cases and two from ether, you will agree with us that chloroform is not only the best, but also the safest anesthetic to use at extreme altitudes.

CAPSULAR INCISION FOR NEPHRITIS.

BY E. L. DRAKE, M. D., WINCHESTER, TENN.

Edebohl's operation is brilliant, but it is open to the same criticism as the famous cavalry charge at Balaklava. That was "brilliant, but it was not war;" this operation tho captivating to the fancy and holding out some specious hope of cure by relief to the strangulated kidney and restoration of the circulation, is not proper surgery. The relief is only temporary, and the operation not curative, in a true sense, as the results plainly show.

A certain amount of arterial pressure on the kidney seems to be normally necessary to facilitate the expression into the calyces of the soluble and non-viscid waste products that can permeate readily the delicate hyaline membrane, leaving the proper blood elements behind. There is undoubtedly a mechancial element in the process, being precisely the same as when from obstruction the heart forces a certain amount of fluid out thru the delicate arterioles into the areolar tissue, constituting anasarca, thereby relieving the vascular distention due to the retained waste products, that are normally eliminated.

If an operation could promptly abort the chronic inflammation the Edebohl's procedure might under favorable conditions be justifiable. But the heart pressure must be reckoned with as a factor in the case. The heart's action is always increast in this disease, the pulse being distinctively hard; and before the damage can possibly be repaired (unless the case is mild) the pathological conditions return actively and the operation fails perforce. I am therefore of the opinion that the relief is only temporary and delusive; the operation, tho brilliant, is illogical.

But, granting that the operation may be successful in a certain limited number of cases it is not justified, when, as is now well establisht we have a remedy, anasarcin, that is absolutely free from danger and is far more positive and certain in its action. It will cure hundreds of cases, where the operation will relieve one. Its properties make it an ideal remedy in the pathological conditions in acute and chronic nephritis; hence inflammation of the kidney is likely to remain a medical instead of surgical affection. This has been found to be capable of slowing the heart's action in a remarkable manner, even reducing the pulse to as low as forty beats per minute and maintaining that rate for weeks and months continuously, without injury to the patient. It further balances the pressure between the arterial and venus systems and is able to restore compensation even in the worst forms of mitral disease, as the writer personally knows. It fulfills the indications in Bright's disease as no operation can possibly do, and, taking the mass of professional testimony in its favor in this disease, no surgeon acquainted with its action and history should resort to such a dangerous, deceptive and uncertain procedure, as Edebohl's operation, until after trying it. But, if from any cause he should feel impelled to perform it, he would add greatly to his chances by using the remedy beforehand to get the circulation under control; and follow with it afterwards to maintain its influence.

The writer speaks from his own experience with this remedy, as well as that of others, and feels he is doing a service to any physician, who has a case of this disease to treat, in commending this remedy. It will also be found of value in cases of ascites from portal obstruction, which it is very effective in removing without the use of the trocar.

APIOLINE IN AMENORRHEA AND DYSMENORRHEA.

BY J. L. HATCH, B. Sc., M. D., NEW YORK CITY.

The curse put upon Eve in the garden of Eden has proved to be more than the mere fulfillment of bringing forth children with the concomitant suffering it entails, for the irregularities in the normal function of menstruation have become not only disagreeable, but dangerous.

The chief event in menstruation is the escape of a ripe egg from the ovary, which finds its way by means of the Fallopian tubes to the uterus with the consequent physiological result of hyperemia in all the parts concerned. This gives rise to hemorrhages from the superficial vessels in the mucous membrane lining the womb, which membrane subsequently undergoes fatty degeneration, and is expelled in shreds with the catamenia, towards the end of the menstrual molimina.

It can thus readily be seen that with so many factors involved in a physiological function, just so many avenues are open for the entrance of deleterious changes in function, and when we stop to consider that beyond this lies the greatest element of all, the nervous, and that the whole process can be inhibited or stimulated from a center, we are not surprised to find that the causes of menstrual disorders are manifold.

All these disorders have for convenience sake been groupt under four heads, viz.: amenorrhea, dismenorrhea, menorrhagia, and metrorrhagia—the last two, however, can be considered under dysmenorrhea.

Amenorrhea is the complete or partial cessation of the menses, and all those causes which tend to deteriorate the blood, or act in such a way upon nutrition as to cause malassimilation, favor it. The most common of these conditions is the demand made upon the system during the development of the organs to a suitable condition for conception, which takes place at puberty; hence we often find young girls who have been healthy up to this age suddenly developing chlorosis, with neuralgic pains in different parts of the body, and perverted tastes of all sorts, such as a desire to eat chalk, slate pencils, etc. The cessation of the menses may last for years and then suddenly they may be resumed; or the flow may be scanty for a period, then normal again, and thus alternately scanty and full for months or even years. The surroundings of the female play an important part in her development, so that when she is badly nourisht, exposed to bad air, overworkt, or subjected to great mental strain and shock, anemia with amenorrhea is likely to intervene.

Certain wasting diseases, such as tuberculosis, nephritis and diabetes, are often underlying factors in causing amenorrhea, and even getting the feet wet or taking a severe cold have caused protracted cessation of the menses, particularly in young females.

Of course, congenital anomalies, such as the absence of the ovaries and uterus, will make menstruation impossible, altho there are physiologists who claim that the desire to do so exists in the nervous system, and is the real primal factor in the cause of menstruation.

In opposition to amenorrhea we have menorrhagia, which is an excessive flow at the catamenial period. If this occurs in between periods it is called metrorrhagia. Both these forms may come under the head of dysmenorrhea, as there is usually considerable pain at the time of their occurrence; but it should be remembered there may be hemorrhages that have nothing to do with menstruation.

Dysmenorrhea is a term used to designate difficult and painful menstruation, but as there is normally in most cases a certain amount of pain, such as backache, headache, lassitude and languor, true dysmenorrhea and normal menstruation must not be confounded.

The causes of dysmenorrhea are varied and depend upon so

many factors that to treat of them under one head would be confusing; so I shall append the causes of each form in a tabulated classification, together with that of amenorrhea in order to make more lucid.

ORGANIC—CONGENITAL:—

No ovaries, no uterus, no tubes.
Rudimentary ovaries and uterus.
Atresia of the genital tract.

ORGANIC—ACQUIRED:—

Degeneration or malignant disease of the ovaries.
Metritis and endometritis.
Atrophy of ovaries and uterus.
Pelvic peritonitis.
Atresia of cervix or vagina.
Removal of ovaries and uterus.

FUNCTIONAL:—

Sudden mental or physical shock.
Change of climate or mode of life.
Reflex neuroses.
Exposure to wet and cold.
Causes that cannot be attributed to anything else.

CONSTITUTIONAL:—

Chlorosis.
Other varieties of anemia.
Chronic wasting diseases—Tuberculosis, etc.
Acute infectious diseases.
Diabetes.
Splenic leukemia.
Obesity.
Myxedema.
Acromegaly.
Addison's Disease.
Exophthalmic goiter.
Morphinism.
Alcoholism.
Mental and nervous disorders.

Applying the same method of analysis to dysmenorrhea we have the following table:

MECHANICAL OR OBSTRUCTIVE:—

Due to displacement of uterus, uterine polypi, submucous fibroids, sacculations in the uterine cavity, congenital or acquired stenosis (of the cervix or vagina).

CONGESTIVE OR INFLAMMATORY:—

Inflammation of the uterus, ovaries, tubes or pelvic peritoneum.

NEURALGIC. SYMPATHETIC OR SPASMODIC:—

Occurs in hysterical neurotic women, and those who are sexually hyperesthetic. In some cases it is a true neuralgia, and other nerves are affected, like the facial.

MEMBRANEOUS:—

Endometritis, causing the formation of a membraneous bag. Heredity, bodily exertion or excitement.

OVARIAN:—

Really belongs under head of "Congestion," as it is due to congestion and inflammation of the ovaries.

REFLEX:—

Is a menstrual pain that results reflexly from some other organ in the body.

ATROPHIC:—

Due to atrophy of the uterus and ovary. The blood vessels become so narrowed that the pressure of the blood causes stenosis and pain.

Of all these different forms of amenorrhea and dysmenorrhea those that come more often to the notice of the general practitioner are functional amenorrhea and congestive, or inflammatory, dysmenorrhea. The pathology in both is based upon the blood-supply, and necessarily the treatment must be similar.

I intend to confine myself to the treatment of these two classes, as the other forms are well known, and their treatment so well laid down in the text books as not to require further explanation at my hands.

In the case of amenorrhea, whether it is due to mental or physical shock, change of climate or mode of life, reflex neuroses, exposure to wet or cold, the primal factor is the nervous system acting reflexly on the organs concerned in menstruation. Nutrition is affected and the blood becomes poor in quality and less in quantity. The indications, at first sight, would be thought to be to give something to increase the amount of hemglobin in the blood and bring its quantum up to the standard, but experience has taught us that this is not sufficient. We must get at and attack the underlying nervous cause; then we will get an equilibrium in the quality and quantity of the blood, and regular menstruation will follow in the natural course of events.

This has long been recognized and the number of emenogogues that have been tried with good, bad and indifferent effects is very numerous. In congestive dysmenorrhea we have the opposite state of affairs, hyperemia instead of anemia of the parts, but the primal cause still lies in the nervous system, just as in the case of amenorrhea, the only difference being that in the one case it is an inhibition while in the other it is a stimulation. The pain in these cases is due to pressure from the congestion, and they should not be confounded with and classified among the neuralgic varieties, as they are not true neuralgias.

Analgesics of all sorts have been given to alleviate the pain, and a long list of emmenagogues has been tried to relieve the congestion, the best of which are those which act upon and remove the nervous stimulation in dysmenorrhea, as well as the nervous inhibition in amenorrhea. Of these emmenagogues the most powerful and reliable is certainly the true active principle of parsley, or apioline, isolated by Chapoteaut in 1885. This must not in any way be confounded with so-called "apiol" (see note below), which is simply oil of parsley, and contains a variable, small percentage of apioline.

Apioline, according to Chapoteaut, is made by exhausting the seeds of the "apium petroselinium" with light petroleum ether, distilling, washing with alcohol and treating these washings with caustic soda, which yields the pure apioline on distillation. It is a reddish liquid, boiling at 300 C. The action of apioline seems to be exerted on the vaso-motor system, but whether it acts peripherally or centrally is still uncertain. It certainly relieves the pain (where a correct diagnosis has been made of the case) due to congestion in dysmenorrhea, causing an increast flow of blood from the uterus, from reflex stimulation of the genito-spinal vasomotor system.

Especially does it give relief in suppresst menstruation, due to taking cold, fright, etc., bringing on the menses in twenty-four hours. The dose is four minims, and should be dispenst in capsules, repeated every three to six hours.

These capsules of Chapoteaut's apioline have been thoroly tested by Prof. J. Laborde of the French Academy of Medicine, who made an investigation of the action of apioline on animals; and the clinical results of Dr. Pelletan, of Paris, show that its claims as an emmenagogue are well-founded, a fact substantiated by thousands of medical men in this country. Pelletan says he believes "it acts directly upon the uterus and ovaries while passing thru them in the circulation, causing hyperemia."

In those cases in which I have tried apioline, it has given me such brilliant results, that I now invariably prescribe it in all cases of functional amenorrhea and in inflammatory or congestive dysmenorrhea. With such an agent in our hands, pain, "woman's heritage from ignorance in the past," must surely be relegated to that past.

SURGICAL NOTES.

NEVO-CARCINOMA.

At the late meeting of the American Dermatological Association, Dr. A. Ravogli, of Cincinnati, reported two cases of this trouble; and concluded his paper by saying: It appears that carcinoma more frequently affects those organs which are most exposed to irritation, to abrasions, and consequently to the entrance of infectious germs. In the cases of carcinoma starting from a nevus, it is clearly seen that continuous irritation and often-repeated abrasions act on the soft and protuberant mass of the nevus. Nevi seated in places where they are protected from injury are not affected by carcinoma, but on the contrary nevi in regions exposed to irritation are often changed into carcinoma. Just lately in his private practice he saw an extended ulceration affecting the whole surface of a vascular nevus of the internal region of the thigh, in a baby four months old. The ulcerative condition was produced by the presence of urine, perspiration, etc., remaining on the tender surface of the nevus. Carcinoma frequently affects nevi not on account of the cells remaining in the structure of the nevus from the embryonic stage, but on account of the frequent bruises and irritation to which they are exposed, and their soft stroma, which easily react to irritation. The name of nevo-carcinoma has only the meaning of a carcinoma on a nevus, but does not have any particular interest in reference to the origin of these growths. The pigment is only a coincidence in the nevus, and in consequence it is found in the carcinomatous stroma as such, and it does not produce nor increase the malignancy of the carcinoma. Carcinoma from the nevus

has the same origin from infectious germs as the other carcinomata, and like any other carcinoma is capable of producing general carcinomatous infection with a fatal end.

ANOTHER HEART-WOUND SUTURED.

Dr. L. L. Hill reports (Journal of the American Medical Association) another case of wound of the heart treated by operation. The injury was of the left ventricle, three-eighths of an inch in extent, causing severe hemorrhage. It was treated with catgut suture and ended in recovery. He gives an analytic table of the cases that have been reported, and concludes from his own experience and a review of the cases tabulated, that any operation which reduces the mortality of a given injury from 90 to about 63 per cent is entitled to a permanent place in surgery, and that every wound of the heart should be operated on immediately. In any case where there is a suspicion of a wound of the heart exploratory operation should be performed at once. Unless the patient is unconscious and the corneal reflex abolisht, an anesthetic should be given, preferably chloroform. Struggling is liable to produce a detachment of the clot and renew the hemorrhage. One should never probe the wound, as serious injury may be inflicted on the myocardium. Rotter's operation renders access to the heart extremely easy, and should be generally adopted. It is necessary to steady the heart before attempting to suture it, either by carrying the hand under the organ and lifting it up, or, if the hole is large enough, introducing the little finger as did Parozzani, which will serve the double purpose of stopping the bleeding and facilitating the passage of the stitches. Catgut sutures should be used, as wounds of the heart heal in a remarkably short time; and they should be interrupted, introduced and tied during diastole; and should not involve the endocardium. As few as possible should be passt to prevent leakage, as they cause a degeneration of the muscular fiber, with its tendency to dilatation and rupture. In cleansing the pericardium it should be sponged out, and no fluid poured into the sac. Perfect cleanliness should be secured excepting in cases where instant intervention is required. The wound in the pericardium should be closed, and if symptoms of compression appear, reopened and drained.

FERGUSON'S OPERATION FOR CLEFT PALATE.

In a recent article Dr. Alex. Hugh Ferguson, of Chicago, Professor of Surgery in the University of Illinois, describes an operation especially suitable for cases where the mouth is like a Gothic arch, the palate segmented, extending downward into the cleft in a more or less oblique manner, and where the cleft extends into one nostril. Two mucoperiosteal flaps are liberated, the one from the inner segment turned downward into the mouth, and that from the outer segment passed into the nostril. When these are coaptated, raw surface to raw surface, they overlap, and are held there by a few stitches. The results have been good in the four operations in which he has tried it. The details of the operation are as follows: Administer chloroform by the spray method; place the patient in the Rose position; sit at the head of the patient; open the mouth with a gag; cleanse the face and mouth with a lotion of equal parts of alcohol and water, and cocainize the soft palate, pharynx and larynx. Raise a mucoperiosteal flap from the nasal septum and inner segment of the hard palate and drag it into the mouth with Brophy's hoe-shaped periosteal elevator. This instrument is quite sharp and easily cuts thru the mucous membrane and periosteum. The formation of this flap is commenced as high in the nose as possible, and it is liberated from above downward till it is hinged by its attachment to the hard palate along the teeth. Now extend the incision in the under surface of this segment of the soft palate and uvula so as to make the completed dissection form one large flap from the hard and soft palate. The second flap is now formed from the outer segment by making an incision along the teeth down to the bone, and with a periosteal elevator detach a mucoperiosteal flap till it is hinged by the mucous membrane along the inner border of the bone segment. The soft palate and uvula segment on this side is now split along the anterior surface. The mucous membrane on the first flap faces downward while that of the second flap is on the nasal aspect, and when coaptated, raw surface to raw surface, they are held there by two rows of stitches.

NEW THEORY OF THE ETIOLOGY OF APPENDICITIS.

Medical Age says that a new theory in regard to the etiology of appendicitis has been advanced by Dr. H. C. Howard, of Champaign, Ill. He claims that the increase in the number of cases of appendicitis of late years is due to the change in the methods of milling flour. Up to 1875 cases of this trouble were exceedingly rare, and he asserts that the modern process of milling very white, fine flour, which takes from the grain nearly all the phosphates and leaves only starch and gluten, is chiefly responsible for the disease. He aserts that wherever a community has abandoned the old-fashioned, coarse flour, appendicitis has very soon made its appearance, the latest illustration being among the negroes of the South, who, while their bread diet was solely corn flour, did not know what the disease was. As the use of fine, white flour has increast, appendicitis has made its appearance among them with most disastrous results.

TO CONTROL NASAL HEMORRHAGE.

Rumbold says that hemorrhage from any nasal operation is quickly arrested by spraying vaseline as not as can be borne into the nostril. The application of a solution of adrenalin chloride is also efficacious.

OPERATION FOR RECTAL PROLAPSE.

Dr. Jos. M. Mathews, Professor of Rectal Surgery in the Hospital College of Medicine, Louisville, says that many bad cases of rectal prolapse demand abdominal section and ventral fixation of the sigmoid; but some may be cured by this method. The rectum is irritated several times before the operation with a hot solution of boric acid, one ounce of the powder dissolved in a gallon of distilled water. After the patient is anesthetized, the rectum is drawn out to the full extent of the prolapse. It is then held firmly by forceps, and an incision is made at the anal portion of the prolapse, completely around the gut. A careful dissection is next made of the mucous membrane and submucous tissue, extending to the terminal end of the prolapse, when with a stout pair of scissors it is cut off, removing a cuff. The two edges are then pulled together and sutured with catgut. There is very little blood lost during the operation, and all hemorrhage can be checkt by the application of hot sponges. The result has been so satisfactory after this operation that the writer begs to recommend it to those looking after this kind of work. The peritoneum must under no circumstances be opened in this operation.

TREATMENT OF INOPERABLE CANCER.

After an elaborate review of the various methods of treatment, including serumtherapy, phototherapy, radiotherapy, etc., Morris (Journal of American Medical Association) offers the following conclusions: (1) That the bacterial treatment of malignant disease is not of the slightest use in carcinoma; that not one-half of the cases of spindle-celled sarcoma disappear under treatment with Coley's fluid; that in cases of carcoma, other than the spindle-celled, Coley's fluid it not of value; that the treatment with Coley's fluid; that in cases of sarcoma, other be employed except in absolutely inoperable cancer. (2) That Beatson's treatment is limited in its action to cases of mammary carcinoma, and even in these cases only a small proportion are influenced by the treatment, while neither as a cure nor as a palliative can it be relied on in any given case. (3) That rodent ulcer has in Finsen's light and in the X-rays its most successful treatment, and that this is true not only of cases otherwise inoperable, but also of operable cases, because of their excellent cosmetic results, and of their effect on insidious and non-evident foci. (4) That sarcoma, epithelioma and the other forms of carcinoma are best treated, whenever possible, by early excision; and that all forms of treatment hitherto tried in inoperable cancers of these kinds are uncertain and inconstant in their effects, and unreliable as to the durability of the results they produce. In the vast majority of cases they are quite without palliative influence of any kind, except possibly in relieving pain. (5) That the boundary line between what are considered operable and inoperable cases needs revision from time to time; that the tendency to extend the limits of operable cases needs in some instances to be restricted, and in others there may prove room for further extension. (6) That it is open to question whether some of the operations performed for relief should not be abandoned, and whether in other cases palliative operations ought not to be more often performed. (7) That investigations into both the cause and nature of the cancer are of the first importance, as being more likely to ultimately lead to cure than any treatment at present known. (8) That, with few exceptions, the attempts to cure cancer by means other than early and free operations have been hitherto almost invariably futile.